

CURRICULUM VITAE
Steven D. Carson, Ph.D.
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EDUCATION

Rice University, Houston, TX, B.A., Biochemistry and Environmental Science and Engineering, 1973

University of Texas Medical Branch, Graduate School of Biomedical Sciences, Galveston, Ph.D., Human Genetics and Cell Biology, 1978, in the laboratory of Dr. Barbara H. Bowman.

POST DEGREE TRAINING

Yale University, Department of Molecular Biophysics and Biochemistry
Postdoctoral Fellow, 1978-1982, in the laboratory of Dr. William H. Konigsberg.

ACADEMIC APPOINTMENTS

Professor Emeritus of Pathology, Microbiology, and Immunology
University of Nebraska Medical Center, Omaha, Nebraska. 2022 to present.

Professor of Pathology and Microbiology,
University of Nebraska Medical Center, Omaha, Nebraska. 1993 to 2022.

Associate Professor of Pathology and Microbiology,
University of Nebraska Medical Center, Omaha, Nebraska. 1988 to 1993.
Granted Tenure, 1991.

Assistant Professor of Pathology,
University of Colorado School of Medicine. 1982 to 1988.
Assistant Professor of Pathology
and Biochemistry, Biophysics and Genetics, University of Colorado School
of Medicine. Secondary appointment 1984 to 1987.

Research Associate and Lecturer
Department of Molecular Biophysics and Biochemistry, Yale University
School of Medicine. July/Sept - December 1982.

RESEARCH GRANT SUPPORT

As Principal Investigator:

NIH R03 AI130174-01A1, Receptor-mediated steps in enterovirus infection
involve allostery. Dec 2017- Nov 2021.

NIH R01 AI054551, Junction Adhesion Molecule CAR and the Immune System.
Sept 2003 - Dec 2009.

NIH R01 HL31408, Functional Studies of Tissue Factor. Jan 1991 – Dec 1997.

NIH R01 HL31408, Functional Studies of Tissue Factor. Dec 1986 – Nov 1990.

NIH New Investigator Research Award, HL31408, Functional Studies of Tissue
Factor. Dec 1983 – Nov 1986.

NIH K04 HL02072, Research Career Development Award, Control of Tissue
Factor Activity. April 1988 – March 1993.

NIH Biomedical Research Grant Program, BRSG-05357, Cellular Uptake of
Cadmium. April 1983 – Sept 1983.

NIH National Research Service Award, HL06034, Purification and Molecular
Studies of Tissue Factor. July 1979 – June 1982.

NSF National Needs Postdoctoral Fellowship, SP178-15669, Purification and
Molecular Studies of Tissue Factor. June 1978 – May 1979.

American Heart Association, Heartland Affiliate, Human Receptor for
Coxsackievirus. Jan 2003 - Dec 2004.

American Heart Association, Coxsackievirus B3 Receptor. July 1997 – June 1999.

American Heart Association Research Grant-in-Aid, Expression of Cellular
Procoagulants. July 1986 – June 1987.

American Heart Association Research Grant-in-Aid, Expression of Cellular
Procoagulants. July 1985 – June 1986.

Edna Ittner Pediatric Research Support Grant,
Coxsackievirus Receptor and the Immune System. July 2002 - June 2003.

Edna Ittner Pediatric Research Support Grant,

Group B Coxsackievirus phenotypic adaptation to low-receptor environment. Nov 2010 - Oct 2012.

The Milheim Foundation, Tissue Factor in Cancer. July 1987 – June 1988.

The Milheim Foundation Research Grant- declined due to duplicate funding. June 1985 – May 1986.

Confidential corporate contract. March 1998 – Dec 1999.

As Co-Investigator:

Educational Technology Small Grant, ET-00-02, UNMC, Interactive Pharmacology: Coagulation and Anticoagulants. P.I.: R. Kawahara. 1999-2000.

Creation of coxsackievirus mutants based on immunodominant epitopes for use as safer vaccine candidates and vectors. Nebraska Research Initiative. P.I.: J. Reddy. 2013-2015.

Proposal to Support Chemical Biological Medical Systems Command: Adjuvant Formulations. A Task Order under FA4600-12-D-9000, University Affiliated Research Center (UARC) Engineering, Research and Development Services. Department of Defense. P.I.: J. Talmadge. 2013-2014.

2019-2024. NIH/NIAID P01AI083211-12, Staphylococcal biofilm and disease, Project 2: Arginine and Proline Metabolism in *Staphylococcus aureus*. P.I.: K. Bayles; Project 2 leader: P. Fey; Co-Investigator: S. Carson.

PROFESSIONAL ACTIVITIES

Editorial Boards:

Blood Coagulation and Fibrinolysis, 1990-2017.

Review Committees:

American Heart Association, Immunology and Microbiology Peer Review, 2005-2008, 2009-2013; Chair 2012, 2013.

Initial Review Committee for NHLBI RFA 89-HL-18-B, "The Role of Hemostasis and Endothelial Cell Reactivity in Vaso-Occlusion in Sickle Cell Disease," July, 1990.

Initial Review Committee for NHLBI, RFA 88-HL-06-B, "The Prothrombotic State in Malignancy", December 1988.

Ad hoc grant reviewer for:

Council for Tobacco Research

National Science Foundation

Natural Sciences and Engineering Research Council of Canada

Veterans Administration

Industrial Consulting:

Merck, Sharp, and Dohme, 1989

Organon Teknika, 1997

HONORS AND AWARDS

Research Career Development Award, National Institutes of Health

National Institutes of Health Individual Research Service Award

National Science Foundation National Needs Postdoctoral Fellow

Fellow, American Heart Association

Marquis Who's Who listings:

Who's Who of Emerging Leaders in America 1987-1988, 1st Edition

Who's Who in the West 1986-1987, 20th Edition

Who's Who in the Midwest 1994-1995, 24th Edition

Who's Who in Science and Engineering 1992-1993, 1st Edition

Who's Who in Science and Engineering 2005-2006, 8th Edition

Who's Who in American Education 2007-2008, 8th Edition

Who's Who in America, 2001-2006, editions 55-60.

Who's Who in America, 2017-

PROFESSIONAL MEMBERSHIPS (including prior affiliations)

American Association for the Advancement of Science (current)

American Heart Association, Fellow, Council on Arteriosclerosis, Thrombosis and Vascular Biology

American Society of Hematology (current)

American Society for Biochemistry and Molecular Biology (current)

American Society of Human Genetics (current)

American Society for Microbiology (current)

American Society for Virology (current)

International Society for Thrombosis and Haemostasis

PATENTS

Carson, Steven D., August 29, 1995. Storage cabinet with active dehumidifier.

U.S. Pat. No. 5, 444, 984.

COMMERCIALIZED REAGENTS

Monoclonal Antibody HTF1, against human tissue factor

Monoclonal Antibody E(mh)1, against human and mouse coxsackievirus and adenovirus receptor

BIBLIOGRAPHY (PMID links to PubMed)

Ph.D. Dissertation. 1978. Studies of the Cystic Fibrosis Mucociliary Inhibitor and Basic Proteins of Human Plasma.

Barnett, D.R., A. Kurosky, B.H. Bowman, H.T. Hutchison, I. Schmoyer, and S.D. Carson. 1973. Cystic fibrosis: Molecular weight estimation of the ciliary inhibitor. *Tex. Rep. Biol. Med.* 31:703- 708.

[PMID: 4799117](#)

Bowman, B.H., B.J. Lankford, G.M. Fuller, S.D. Carson, A. Kurosky, and D.R. Barnett. 1975. Cystic fibrosis: The ciliary inhibitor is a small polypeptide associated with immunoglobulin G. *Biochem. Biophys. Res. Comm.* 64:1310-1315.

[PMID: 1137600](#)

Carson, S.D., B.L. Harper, D.R. Barnett, A. Kurosky, B.J. Lankford, and B.H. Bowman. 1976. Electrophoretic studies of the cystic fibrosis ciliary inhibitor and its interaction with immunoglobulin G. *Tex. Rep. Biol. Med.* 32:209-219.

[PMID: 996790](#)

Carson, S.D. 1976. Ammonium molybdate - stannous chloride determination of orthophosphate in the presence of Triton X-100. *Anal. Biochem.* 75:472-477.

[PMID: 984407](#)

Carson, S.D. 1977. Hydrazinoacridine staining of proteins and glycoproteins in polyacrylamide gels. *Anal. Biochem.* 78:428-435.

[PMID: 851217](#)

Bowman, B.H., B.J. Lankford, M.C. McNeely, S.D. Carson, D.R. Barnett, and K. Berg. 1977. Cystic fibrosis: Studies with the oyster ciliary assay. *Clin. Genet.* 12:333-343.

[PMID: 589856](#)

Carson, S.D., and W.H. Konigsberg. 1980. Cadmium increases tissue factor (coagulation factor III) activity by facilitating its reassociation with lipids. *Science* 208:307-309.

[PMID: 7367861](#)

Carson, S.D., and W.H. Konigsberg. 1980. Lipid activation of coagulation factor III apoprotein (tissue factor) - reconstitution of the protein-membrane complex. *Thrombos. Haemostas.* 44:12-15.

[PMID: 7423440](#)

Bowman, B.H., D.R. Barnett, S.D. Carson, and M.C. McNeely. 1980. Studies of cystic fibrosis utilizing mucociliary activity in oyster gills. *Fed. Proc.* 39:3195-3200.

[PMID: 7002621](#)

Carson, S.D., and B.H. Bowman. 1981. Low molecular weight plasma proteins isolated from preparations of human immunoglobulin. *Biochim. Biophys. Acta* 667:23-34.

[PMID: 6163473](#)

Carson, S.D., and W.H. Konigsberg. 1981. Coagulation factor III (tissue factor) interaction with phospholipid vesicles induced by cadmium: Characterization of the reconstituted protein-membrane complex. *Biosci. Rep.* 1:197-205.

[PMID: 7295892](#)

Carson, S.D. 1981. Plasma high density lipoproteins inhibit the activation of factor X by factor VIIa and tissue factor (factor III). *FEBS Letts.* 132:37-40.

[PMID: 6795061](#)

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Carson, S.D., and W.H. Konigsberg. 1981. Phenyl-Sepharose chromatography of membrane proteins solubilized in Triton X-100. *Anal. Biochem.* 116:398-401.

[PMID: 7316173](#)

Carson, S.D., and B.H. Bowman. 1982. Cystic fibrosis: I. Fractionation of the mucociliary inhibitor from plasma. *Pediatr. Res.* 16:13-20.

[PMID: 7200225](#)

Carson, S.D. 1983. Chromatographic depletion of lipoproteins from plasma and recovery of apolipoproteins. *Biochim. Biophys. Acta* 750:317-321.

[PMID: 6407529](#)

Schneider, L.W., D.R. Barnett, S.D. Carson, R.M. Goldblum, P.H. Van Bragt, H.J.A. Breywo, J.D. Bell, L.C. Travis, and B.H. Bowman. 1983. Studies of human urinary fragments from extracellular matrix proteins. *Renal Physiol.* 6:157-162.

[PMID: 6612088](#)

Carson, S.D., S.M. Carson, and W.H. Konigsberg. 1983. Monoclonal antibody recognizing rabbit IgG (Fab): A specific reagent for second-antibody applications. *J. Biol. Chem.* 258:9510-9513.

[PMID: 6874700](#)

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Carson, S.D. 1983. Cadmium causes vesicle leakage under conditions which favor reconstitution of tissue factor-vesicle complexes. *J. Membr. Biol.* 75:123-127.

[PMID: 25691372](#)

Carson, S.D. 1984. Tissue factor-initiated coagulation. *Progr. Clin. Pathol.* 9:1-14.

[PMID: 6364218](#)

Carson, S.D. 1984. Cadmium binding to human alpha-2-macroglobulin. *Biochim. Biophys. Acta* 791:370-374.

[PMID: 6083804](#)

Carson, S.D. 1985. Selective immunoprecipitate identification using monoclonal anti-rabbit IgG. *Anal. Biochem.* 145:148-150.

[PMID: 4003758](#)

Carson, S.D., and C.A. Ramsey. 1985. Tissue factor (coagulation factor III) is present in placental microvilli and cofractionates with microvilli membrane proteins. *Placenta* 6:5-12.

[PMID: 3991474](#)

Carson, S.D. 1985. Computerized analysis of enzyme cascade reactions using continuous rate data obtained with an ELISA reader. *Computer Programs in Biomedicine* 19:151-157.

[PMID: 3896634](#)

Carson, S.D., R. Bach, and S.M. Carson. 1985. Monoclonal antibodies against bovine tissue factor which block interaction with factor VIIa. *Blood* 66:152-156.

[PMID: 2408694](#)

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Carson, S.D., W.M. Henry, and T.B. Shows. 1985. Tissue factor gene localized to human chromosome 1 (1pter-1p21). *Science* 229:991-993.

[PMID: 4023720](#)

Ross, S.E., and S.D. Carson. 1985. Rapid chromatographic purification of apolipoproteins A-I and A-II from human plasma. *Anal. Biochem.* 149:166-168.

[PMID: 3935001](#)

Carson, S.D., and P.G. Archer. 1986. Tissue factor activity in HeLa cells measured with a continuous chromogenic assay and ELISA reader. *Thrombos. Res.* 41:185-195.

[PMID: 3515617](#)

Gerschenson, M., K. Graves, S.D. Carson, R.S. Wells, and G.B. Pierce. 1986. Regulation of melanoma by embryonic skin. *Proc. Natl. Acad. Sci. USA* 83:7307-7310.

[PMID: 3463969](#) / [PMCID: PMC386705](#)

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Ross, S.E., S.D. Carson, and L.M. Fink. 1986. Effects of detergents on avidin-biotin interaction. *Biotechniques* 4:350-353.

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- Carson, S.D. 1987. Tissue factor (coagulation factor III) inhibition by apolipoprotein A-II. *J. Biol. Chem.* 262:718-721.
[PMID: 3100517](#) [Full text PDF available](#)
- Carson, S.D., S.E. Ross, R. Bach, and A. Guha. 1987. An inhibitory monoclonal antibody against human tissue factor. *Blood* 70:490-493.
[PMID: 3607285](#) [Full text PDF available](#)
- Carson, S.D. 1987. Continuous chromogenic tissue factor assay: Comparison to clot-based assays and sensitivity established using pure tissue factor. *Thrombos. Res.* 47:379-387.
[PMID: 3660349](#)
- Carson, S.D., S.E. Ross, and R.A. Gramzinski. 1988. Protein co-isolated with human tissue factor impairs recovery of activity. *Blood* 71:520-523.
[PMID: 3337913](#) [Full text PDF available](#)
- Carson, S.D., and S.E. Ross. 1988. Effects of lipid-binding proteins apoA-I, apoA-II, β_2 -glycoprotein I, and c-reactive protein on activation of factor X by tissue factor - factor VIIa. *Thrombos. Res.* 50:669-678.
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- Brozna, J.P., and S.D. Carson. 1988. Monocyte-associated tissue factor is suppressed by phorbol myristate acetate. *Blood* 72:456-462.
[PMID: 2840984](#) [Full text PDF available](#)
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[PMID: 2900354](#)

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Faulk, W.P., C.A. Labarrere, and S.D. Carson. 1990. Tissue factor: Identification and characterization of cell types in human placentae. *Blood* 76:86-96.

[PMID: 2364176](#)

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Carson, S.D., and D.R. Johnson. 1990. Consecutive enzyme cascades: Complement activation at the cell surface triggers increased tissue factor expression. *Blood* 76:361-367.

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Carson, S.D., S.J. Pirruccello, and W.D. Haire. 1990. Tissue factor antigen and activity are not expressed on the surface of intact cells isolated from an acute promyelocytic leukemia patient. *Thrombos. Res.* 59:159-170.

[PMID: 2399527](#)

Labarrere, C.A., C.T. Esmon, S.D. Carson, and W.P. Faulk. 1990. Concordant expression of tissue factor and class II MHC antigens in human placental endothelium. *Placenta* 11:309-318.

[PMID: 2172958](#)

Abshire, T.C., S.H. Gold, L.R. Odom, S.D. Carson, and W.E. Hathaway. 1990. The coagulopathy of childhood leukemia: Thrombin activation or primary fibrinolysis? *Cancer* 66:716-721.

[PMID: 2386901](#)

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[PMID: 2177922](#)

Labarrere, C.A., S.D. Carson, and W.P. Faulk. 1991. Tissue factor in chronic villitis of unestablished etiology. *J. Reprod. Immunol.* 19:225-235.

[PMID: 1865388](#)

Carson, S.D., and B. Baggenstoss. 1991. Identification of peptides within a known protein sequence using COMSEQ analysis of data containing multiple sequences. *Computer Methods and Programs in Biomedicine* 35:35-42.

[PMID: 1879134](#)

McComb, R.D., K.A. Miller, and S.D. Carson. 1991. Tissue factor antigen in senile plaques of Alzheimer's disease. *Am. J. Path.* 139:491-494.

[PMID: 1887858](#) / [PMCID: PMC1886219](#)

Cohen, S.M., M. Cano, R.A. Earl, S.D. Carson, and E.M. Garland. 1991. A proposed role for silicates and protein in the proliferative effects of saccharin on the male rat urothelium. *Carcinogenesis* 12:1551-1555.

[PMID: 1893514](#)

Carson, S.D., W.D. Haire, G.J. Broze, Jr., W.F. Novotny, S.J. Pirruccello, and M.J. Duggan. 1991. Lipoprotein associated coagulation inhibitor, factor VII, antithrombin III, and monocyte tissue factor following surgery. *Thombos. Haemostas.* 66:534-539.

[PMID: 1803617](#)

Carson, S.D., and S.C. Yoder. 1992. Monoclonal antibodies against the C-terminal peptide of human tissue factor for studies of the cytoplasmic domain. *Blood Coagulation and Fibrinolysis* 3:779-787.

[PMID: 1489899](#)

Carson, S.D., and J.P. Brozna. 1993. The role of tissue factor in the production of thrombin. *Blood Coagulation and Fibrinolysis* 4:281-292.

[PMID: 8499566](#)

Carson, S.D., and S.J. Pirruccello. 1993. Immunofluorescent studies of tissue factor on U87MG cells: Evidence for non-uniform distribution. *Blood Coagulation and Fibrinolysis* 4:911-920.

[PMID: 8148484](#)

Carson, S.D., D. R. Johnson, and S. M. Tracy. 1993. Tissue factor and the extrinsic pathway of coagulation during infection and vascular inflammation. Eur. Heart J. 14 (Suppl. K):98-104.

[PMID: 8131798](#)

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Haire, W.D., S.J. Pirruccello, and S.D. Carson. 1994. Monocyte tissue factor in treated Hodgkin's disease. Leukemia and Lymphoma 12:259-263.

[PMID: 8167556](#)

Carson, S.D., G.A. Perry, and S.J. Pirruccello. 1994. Fibroblast tissue factor: calcium and ionophore induce shape changes, release of membrane vesicles, and redistribution of tissue factor antigen in addition to increased procoagulant activity. Blood 84:526-534.

[PMID: 8025281](#)

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Brozna, J.P., M. Forman, and S.D. Carson. 1994. Staurosporine blocks down-regulation of monocyte-associated tissue factor. Blood Coagulation and Fibrinolysis 5:929-938.

[PMID: 7534487](#)

Whittle, S.M., S.C. Yoder, and S.D. Carson. 1995. Human placental tissue factor: protease susceptibility of extracellular and cytoplasmic domains. Thrombos. Res. 79:451-459. Erratum in: Thrombos. Res. 1997. 85:443

[PMID: 7502271](#)

Carson, S.D. 1996. Manifestation of cryptic fibroblast tissue factor occurs at detergent concentrations which dissolve the plasma membrane. Blood Coagulation and Fibrinolysis 7:303-313.

[PMID: 8735137](#)

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[PMID: 8735138](#)

Carson, S.D., N.M. Chapman, and S.M. Tracy. 1997. Purification of the putative coxsackievirus B receptor from HeLa cells. Biochem. Biophys. Res. Commun. 233:325-328.

[PMID: 9144533](#)

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[PMID: 9201931](#)

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[PMID: 9639045](#) [Full text PDF available](#)

Carson, S.D., and S.J. Pirruccello. 1998. Tissue factor and cell morphology variations in cell lines subcloned from U87-MG. *Blood Coagulation and Fibrinolysis* 9:539-547.
[PMID: 9819005](#)

Carson, S.D., J.T. Hobbs, S.M. Tracy, and N.M. Chapman. 1999. Expression of the coxsackievirus and adenovirus receptor in cultured human umbilical vein endothelial cells: regulation in response to cell density. *J. Virol.* 73:7077-7079.
[PMID: 10400813](#) / [PMCID: PMC181285](#) [Full text PDF available](#)

Carson, S.D., and M.E. Bromberg. 2000. Tissue factor encryption/de-encryption is not altered in the absence of the cytoplasmic domain. *Thrombos. Haemostas.* 84:657-663.
[PMID: 11057866](#)

Carson, S.D. 2000. Limited proteolysis of the coxsackievirus and adenovirus receptor (CAR) on HeLa cells exposed to trypsin. *FEBS Lett.*, 484:149-152.
[PMID: 11068050](#) [Full text PDF available](#)

Carson, S.D. 2001. Receptor for the group B coxsackieviruses and adenoviruses: CAR. *Rev. Med. Virol.* 11:219-226.
[PMID: 11479928](#)

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[PMID: 11724543](#)

Tracy, S., K.M. Drescher, N.M. Chapman, K-S. Kim, S.D. Carson, S., Pirruccello, P.H. Lane, J.R. Romero, and J.S. Leser. 2002. Toward testing the hypothesis that group B coxsackieviruses (CVB) trigger insulin-dependent diabetes: Inoculating nonobese diabetic mice with CVB markedly lowers diabetes incidence. *J. Virol.* 76:12097-12111.
[PMID: 12414951](#) / [PMCID: PMC136885](#) [Full text PDF available](#)

Cunningham, K.A., N.M. Chapman., and S.D. Carson. 2003. Caspase-3 activation and ERK phosphorylation during CVB3 infection of cells: Influence of the coxsackievirus and adenovirus receptor and engineered variants. *Virus Res.* 92:179-186.
[PMID: 12686427](#)

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[PMID: 15000844](#)

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[PMID: 15209509](#)

Drescher, K.M., K. Kono, S. Bopegamage, S.D. Carson, and S. Tracy. 2004. Coxsackievirus B3 infection and type 1 diabetes development in NOD mice: insulinitis determines susceptibility of pancreatic islets to virus infection. *Virology* 329(2):381-94.
[PMID: 15518817](#) [Full text PDF available](#)

Carson, S.D., K.-S. Kim, S. J. Pirruccello, S. Tracy, and N.M. Chapman. 2007. Endogenous low-level expression of the coxsackievirus and adenovirus receptor (CAR) enables coxsackievirus B3 infection of RD cells. *J. Gen Virol.* 88:3031-3038.
[PMID: 17947527](#) [Full text PDF available](#)

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[PMID: 18357766](#)

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[PMID: 23408555](#)

Organtini, L. J., A. M. Makhov, J. F. Conway, S. Hafenstein, and S. D. Carson. 2014. Kinetic and structural analysis of coxsackievirus B3 receptor interactions and formation of the A-particle. *J. Virol.* 88:5755-5765.

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[PMID: 25078690](#)

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Chapters in Books

Carson, S.D., and W.P. Faulk. 1992. Blood clotting and immunity. In *Immunological Obstetrics*, Coulam, C.B., W.P. Faulk, J.M. McIntyre, eds., W.W. Norton & Co., pp. 61-72.

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Published Software and WebPages

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CarsonScience.com, professional website.

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TEACHING

Molecular Basis of Human Disease, PAMM 940. 3 credit graduate course; 2002,
2005, 2008, 2010, 2012, 2014, 2016, 2018

Coagulation Physiology, Medical Curriculum M1 Blood Organ Block, (2 hours);
2017, 2018, 2019

Coagulation Physiology, Medical Curriculum M2 Hematology/Oncology Core,
(2 hours); 1996-2018

Molecular You (6 hours), SEPA Program, S. Sioux City, NE, Feb. 29, 2016

Co-evolving with Pathogens (1 hour), UNMC High School Alliance, 2012

Disease, Selection, and Human Genotypes (1 hour), UNMC Summer Medical
and Dental Education Program, 2011

Variations of the Human Phenotype (1 hour), SEPA Program, UNMC, 2010
Disease, Selection, and Human Genotypes (1 hour), UNMC Summer Medical
and Dental Education Program, 2008

Hemostasis, Resident Education (2 hours) 2005, 2007

The Human Phenotype, UNMC Summer Medical and Dental Education
Program, (1 hour) 2006

Senior Basic Science Selective M-ID-724A Hemostasis/Thrombosis.
1995-2001

Hemostasis and Complement, Pharmacy Curriculum (2 hours) 1998

Complement and Blood Clotting, Pharmacy Curriculum (1 hour) 1997

Coagulation Pathology, Advanced Hematology, (1 hour) 1995

Overview of Coagulation, Medical Curriculum M2 Hematology/ Oncology
Core, (1 hour) 1994, 1995

Co-director, Coagulation Conference, 1990-1994

Co-organizer, Coagulation Conference, 1989-1990

Hemostasis and Thrombosis, General Pathology for dental students, University
of Colorado School of Medicine (2 hours)

Tissue Factor Initiated Coagulation, Pathology 501 for medical
students, University of Colorado School of Medicine (1 hour)

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Amino Acids and Proteins, Biochemistry and Nutrition for Dental Hygiene students, University of Colorado School of Medicine (4 hours)
Chemical Characterization of Proteins, 2 credit graduate course; University of Colorado School of Medicine

Public Outreach

Science Matters. Omaha Public Schools Science Teachers. February 22, 2014.

Molecular You (6 hours), SEPA Program, S. Sioux City, NE, Feb. 29, 2016

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